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Bell's palsy in pregnancy: underlying HELLP syndrome or pre-eclampsia?

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Abstract

Bell's palsy is not uncommon during pregnancy. An association with pre-eclampsia (PE) has been reported previously. Furthermore, it has even been suggested that Bell's palsy could be a predictor of PE. We report three cases illustrating various possible aspects of this association, one of them including the features of HELLP (haemolysis, elevated liver enzymes, and low platelets) syndrome.

Keywords

general medicine, high-risk pregnancy, maternal–fetal medicine, neurology

Case reports

The main features of Bell's palsy and pre-eclampsia (PE) in the three cases are summarized in Tables 1 and 2.

Case 1

A 29-year-old gravida 1, para 0 woman was admitted to hospital at 39 weeks of gestation with a history of sudden onset of severe epigastric pain. At admission, blood pressure was normal and there was no proteinuria but HELLP (haemolysis, elevated liver enzymes, and low platelets) syndrome was diagnosed: the platelet count had fallen from 133×10^9/L at 36 weeks to 83×10^9/L, aspartate aminotransferase was 362 IU/L, alanine transaminase was 282 IU/L and total bilirubin level was 10 µmol/L (normal range: 1–17). Corticosteroids were given because of low platelet count (betamethasone, 20 mg intravenously/12 hourly) and labour was induced. Four days after delivery, a left facial weakness occurred and progressed to complete isolated Bell's palsy over two days. Methylprednisolone was given intravenously (60 mg/day) for eight days, followed by oral prednisolone (30 mg/day) for four days. There was a moderate improvement over the next few months but permanent residual left facial palsy remained. Serological examination was negative for viruses as well as for antiphospholipid (lupus anticoagulant, anticardiolipin, anti-β_2-glycoprotein type I) and antinuclear antibodies. Three years later, a subsequent pregnancy was completed without any complication except for late slight gestational thrombocytopenia.

Case 2

A 35-year-old gravida 2, para 0 woman was admitted to hospital at 31 weeks of gestation because of right facial weakness. The pregnancy was a twin gestation following intracytoplasmic sperm injection. Facial weakness progressed to complete facial paralysis within two days. Steroid therapy (prednisone 60 mg/day for 5 days) was followed by complete remission of the palsy within eihjt days. At 33 weeks, a diagnosis of PE was made, leading to a decision to perform a caesarean section: the first newborn weighed 1530 g; the second one was growth-restricted (1170 g). Viral serology was negative for varicella zoster (VZV), cytomegalovirus (CMV), parvovirus B19, HIV and hepatitis B. *Treponema pallidum* particle agglutination assay and Venereal Disease Research Laboratory tests for syphilis were negative, as were antinuclear and antiphospholipid antibodies.

Case 3

A 27-year-old gravida 1, para 0 woman was admitted to hospital at 34 weeks of gestation because of right facial weakness. A diagnosis of complete idiopathic right facial palsy was made. She was given oral corticosteroid therapy (prednisone 40 mg/day) and acyclovir for eight days without any improvement. A diagnosis of PE was made and a caesarean section was performed at 36 weeks. From as early as the first postoperative day, a marked improvement of facial palsy occurred, leading to a full remission at the time of discharge at day 5. Testing for antiphospholipid and antinuclear antibodies and inherited thrombophilic disorders was negative.

Discussion

We report three cases of idiopathic facial paralysis associated with PE: paralysis was preceded by severe *antepartum* HELLP syndrome in the first case, and preceded the development of PE in the other two cases.

Idiopathic facial paralysis (Bell's palsy) has been described in association with pregnancy.[1–3] Pregnant women are affected three times more often than non-pregnant women;[3] the majority of cases occur during the third trimester (71%) and early *postpartum* period (21%).[4] Several hypotheses have been proposed to explain this predisposition of pregnant women to Bell's palsy including immunosuppression,[2,5] increased HZV susceptibility,[2,3,5] but also increased extracellular fluid content.[1–3,5]

Several reports have emphasized a particular link between Bell's palsy and pregnancy complicated by PE.[4,6] A recent retrospective study on 242,216 deliveries found 42 cases of Bell's palsy during pregnancy which was significantly associated with obesity (odds ratio, OR = 9.08), chronic hypertension (OR = 6.69) and severe PE (OR = 9.46). The authors concluded that obesity as well as chronic hypertension were independent risk factors for Bell's palsy during pregnancy; however, no significant correlation could be found between facial paralysis and adverse perinatal outcomes.[7] Furthermore, it has even been suggested that Bell's palsy could be a predictor of PE.[4] HELLP syndrome,[8] which was present in case 1, has not been previously reported in association with Bell's palsy occurring during pregnancy.

Outcome of Bell's palsy in pregnancy has been extensively reported by Gillman *et al.*[9] in 77 patients during a 30-year period, with a

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Table 1. Main obstetric features in the three cases reported.

	Case 1	Case 2	Case 3
Gestation at diagnosis of Bell's palsy (weeks)	Day 4 after delivery	31	34
Gestation at diagnosis of PE and/or HS (weeks)/ at delivery (weeks)	39/39	33/33	34/36
HELLP syndrome (Y/N)	Y	N	N
Birth weight (g)	3300	1530/1170*	3290

PE, pre-eclampsia; HS, HELLP syndrome; Y/N, yes/no
*Twin gestation

Table 2. Main clinical features and outcome of facial palsy in the three cases reported.

	Case 1	Case 2	Case 3
Side of palsy (R/L)	L	R	R
Complete palsy (Y/N)	Y	Y	Y
Regression of palsy after steroids (Y/N)/after delivery (Y/N)	Y/NA*	Y/NA†	N/Y
Complete remission of palsy (Y/N)	N	Y	Y

R/L, right/left; Y/N, yes/no; NA, not applicable.
*Occurrence of palsy four days after delivery.
†Regression of palsy before delivery.

minimum of a one-year followup. They found that in the case of a complete facial paralysis, the prognosis for a satisfactory recovery was significantly worse for pregnant women than for the general population.[9] Some data, although controversial, suggest that steroid treatment could be useful in some cases of *antepartum* HELLP syndrome.[10] It is interesting to remark that in our case 1 the dosage of corticosteroids given for the purpose of treating HELLP syndrome was similar to the dose which has proved effective in randomized controlled trials of Bell's palsy;[11,12] nevertheless, in this case, despite steroid therapy, paralysis occurred *postpartum*.

In cases of Bell's palsy associated with PE and/or HELLP syndrome, delivery must be considered, both because severe pre-eclampsia and/or low platelet count can be threatening for the mother, and possibly in order to offer higher chances of prompt and complete resolution of Bell's palsy.

Conclusion

Bell's palsy occurring in late pregnancy should prompt a search for high blood pressure and proteinuria, as well as HELLP syndrome. Corticosteroid therapy can be useful as in non-pregnant cases of Bell's palsy. However, complete recovery is far from the rule, and is less likely in cases of complete paralysis.

Declaration of Conflicting Interests

None.

Ethical Approval

All patient data has been de-identified.

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